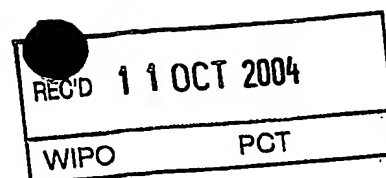


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INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

|   |  |   |
|---|--|---|
| Applicant's or agent's file reference<br>FGPL03-001   | <b>FOR FURTHER ACTION</b>  | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No.<br><b>PCT/KR2003/001239</b>   | International filing date (day/month/year)<br><b>25 JUNE 2003 (25.06.2003)</b> | Priority date (day/month/year)<br>26 JUNE 2002 (26.06.2002)   |
| International Patent Classification (IPC) or national classification and IPC<br><br><b>IPC7 H03H 9/00</b> |  |   |
| Applicant<br><br><b>LG INNOTEK CO., LTD et al</b>   |  |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

|  |  |
|--|--|
| Date of submission of the demand<br><br><b>16 OCTOBER 2003 (16.10.2003)</b>  | Date of completion of this report<br><br>21 SEPTEMBER 2004 (21.09.2004)  |
| Name and mailing address of the IPEA/KR<br> Korean Intellectual Property Office<br>920 Dunsan-dong, Seo-gu, Daejeon 302-701,<br>Republic of Korea<br>Facsimile No. 82-42-472-7140 | Authorized officer<br><br>JEONG, Jae Heon<br><br>Telephone No. 82-42-481-5672 |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/001239

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages 1 - 20 , as originally filed  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages 21 - 24 , as originally filed  
 pages \_\_\_\_\_ , as amended (together with any statement) under Article 19  
 pages \_\_\_\_\_ , filed with the demand  
 pages 25 , filed with the letter of 24 August 2004
- ☒ the drawings:  
 pages 1/14 - 14/14 , as originally filed  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_ , as originally filed  
 pages \_\_\_\_\_ , filed with the demand  
 pages \_\_\_\_\_ , filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed," and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR2003/001239

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

|                               |        |        |     |
|-------------------------------|--------|--------|-----|
| Novelty (N)                   | Claims | 1 - 18 | YES |
|                               | Claims |        | NO  |
| Inventive step (IS)           | Claims | 1- 18  | YES |
|                               | Claims |        | NO  |
| Industrial applicability (IA) | Claims | 1 - 18 | YES |
|                               | Claims |        | NO  |

### 2. Citations and explanations (Rule 70.7)

See separate sheet.

# INTERNATIOAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/001239

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 15 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved ("(d) setting a range of  $\Phi$ ,  $\Theta$ , and  $\Psi$  defined at (c) in an optimal range in accordance with a type of the substrate") which merely amounts to claiming the underlying technical problem.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/001239

## Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

### Continuation of:

Box No. V Reasoned statement under Rule 43b is.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The following documents referred to this preliminary examination report:

D1 = US 5,917,265 A  
D2 = US 6,031,315 A  
D3 = US 6,097,131 A  
D4 = US 6,194,809 B1  
D5 = US 6,369,667 B1  
D6 = WO 99/48200 A1  
D7 = WO 99/04488 A1

#### ☐ Novelty and Inventive step

The present application relates to the problem of setting optimal cutting ranges to various single crystal substrates for use in a SAW device.

The solution of Claims 1-18 is characterized by setting Euler angles  $\Phi$ ,  $\Theta$ , and  $\Psi$ , between modified axes X, Y, Z, defined by the crystal orientation of the various substrates and their relative axes X', Y', Z', defined by a direction of surface wave propagation, in the optimal cutting ranges.

None of the references recognize the problem of setting optimal cutting ranges to various single crystal substrates for use in the SAW device nor disclose, nor even suggest the solution that the optimal cutting ranges set Euler angles  $\Phi$ ,  $\Theta$ , and  $\Psi$  between modified axes X, Y, Z, defined by the crystal orientation of the various substrates and their relative axes X', Y', Z', defined by a direction of surface wave propagation.

Therefore, the subject-matter of Claims 1-18 is considered to be new and to involve an inventive step.

#### ☐ Industrial applicability

The subject-matter of all the claims meets the criteria of PCT Article 33(4) because it is industrially applicable.

to the surface and normal to the X'-axis;

(c) defining the X', Y' and Z' axes defined at (b) as relative orientation Euler angles of crystals,  $\phi$ ,  $\theta$  and  $\psi$ ; and

5 (d) setting a range of the  $\phi$ ,  $\theta$ , and  $\psi$  defined at (c) in an optimal range in accordance with a type of the substrate.

16. The method according to claim 15, wherein the single crystal substrate is a langasite substrate.

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17. The method according to claim 15, wherein the single crystal substrate is a quartz substrate.

18. The method according to claim 15, wherein the single  
15 crystal substrate is a lithium tantalate substrate.